Arbovirus Surveillance Summary, 2007- Massachusetts Department of Public Health (MDPH)

WEST NILE VIRUS (WNV)

Birds

In 2007, 3059 dead birds were reported to the MDPH Arbovirus Surveillance Program. Of the 223 that were tested for WNV, 43 were positive for WNV including 16 crows and 27 blue jays (see table below). Birds that tested positive for WNV were found in 31 towns in eight counties.

Number of Birds Reported Dead, Tested and Positive for WNV by Species, 2007

	Species				
Status	Crow	Blue jay	Robin	Other	Total
Reported	310	304	407	2038	3059
Tested	55	65	78	25	223
WNV (+)	16	27	0	0	43

Mosquito Samples

Sixty-five of 7271 mosquito samples collected and tested were positive for WNV during the 2007 transmission season. Positive samples were identified in 33 towns in seven counties. Positive mosquito samples included 61 of *Culex pipiens/restuans* complex, three of *Culiseta melanura* and one of *Ochlerotatus japonicus.* Mosquitoes in the *Culex* genus feed mainly on birds and occasionally on mammals, including humans. *Culex pipiens* are known to bite humans typically from dusk into the evening. Most *Culex* species have been implicated as vectors of WNV. *Culiseta melanura* species feed almost exclusively on birds. This mosquito is the primary enzootic vector of EEE virus. *Ochlerotatus japonicus* feeds mainly on mammals and is a fierce human biter. This mosquito can be involved in the transmission of both WNV and EEE in Massachusetts.

Horses

There were no cases of WNV infection identified in horses in Massachusetts in 2007.

Humans

Six WNV human cases were identified in residents of five towns in Suffolk, Middlesex, Barnstable and Worcester counties (see table below). Cases ranged in age from 25 to 81 years old. Onsets ranged from 8/11/2007 to 9/27/2007. Four of the cases presented with neuroinvasive disease and were hospitalized. Two cases presented with West Nile fever and were not hospitalized. One Massachusetts case is believed to have been exposed to WNV while traveling in Montana. There were no human fatalities resulting from West Nile virus infection identified in 2007 in Massachusetts.

In addition to the six Massachusetts cases, two additional cases of WNV were identified in out-of-state residents who fell ill while visiting Massachusetts. Both are believed to have been exposed in their home states; both recovered from the virus.

Specimens Tested and WNV Positive by Year, 2003-2007*

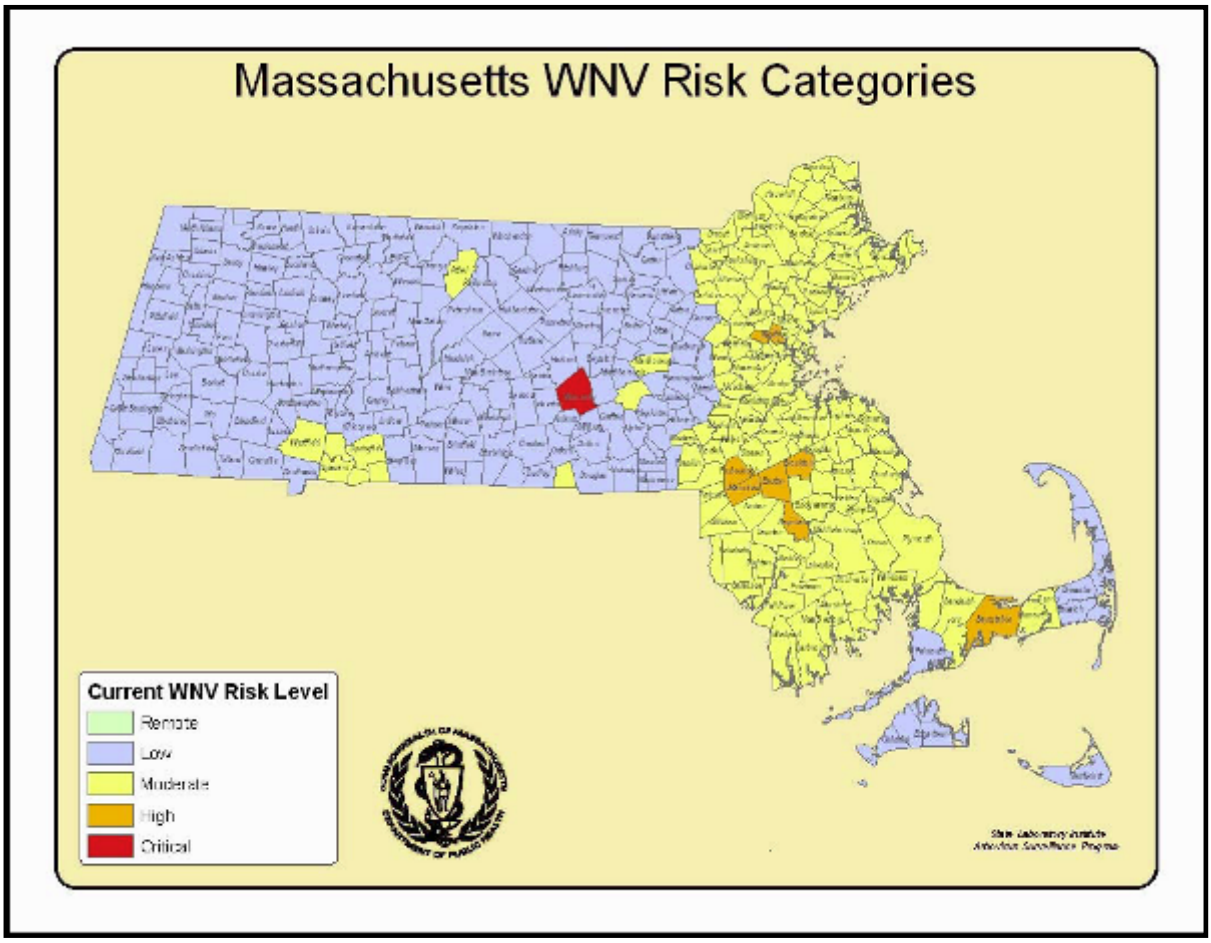
Species	2003		2004		2005		2006		2007	
	Tested	Positive	Tested	Positive	Tested	Positive	Tested	Positive	Tested	Positive
Birds	599	429	86	8	303	57	313	57	223	43
Mosquito Pools	5980	48	7200	15	8136	99	9344	43	7271	65
Horses	38	8	19	0	12	0	16	0	8	0
Humans	790	19**	440	0	544	6	649	3	392	6***

*Comparisons between years must consider variations in surveillance criteria.

**Includes 1 case believed to have been contracted out-of-state and 1 probable case.

*** One MA case exposed out-of-state. Two out-of-state cases exposed in their home states are not included.

Geographic Risk Levels
Beginning in 2007, arbovirus risk maps were produced based on integrating historical data, current positive virus isolations (in humans, mosquitoes, etc), weather conditions, and areas of mosquito habitat. Risk levels were defined as a relative measure of the likelihood of a human outbreak of disease and were updated weekly based on that week's surveillance data. Risk levels from the 2007 season were assigned as seen in the map below. This information will be used to help predict risk in 2008, and will be revised as the 2008 surveillance data is collected.



EASTERN EQUINE ENCEPHALITIS (EEE) VIRUS

Birds
Birds are not routinely tested for EEE virus in Massachusetts because the results do not provide useful information on the level of human risk. However, occasional exceptions are made, and as a result, a flock of exotic quail in Bristol County tested positive for EEE virus in 2007.

Mosquito Samples
Thirty-one of 7271 mosquito samples tested were positive for EEE virus in Massachusetts in 2007. They were collected from 12 towns in two counties. Positive EEE virus mosquito samples included 27 *Culiseta melanura*, two *Culex pipiens/restuans* complex, one *Coquillettidia perturbans*, and one *Ochlerotatus canadensis*. Both *Coquillettidia perturbans* and *Ochlerotatus canadensis* are persistent human biting mosquitoes and are involved in the transmission of EEE virus to humans.

Horses
No horses tested positive for EEE virus in Massachusetts in 2007.

Humans
No human cases of EEE were identified in Massachusetts in 2007.

Geographic Risk Levels
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